In the Claims:

We claim:

1. (currently amended) Device for carrying out gas reactions, comprising a plasma reactor with a through-flow of gases, said plasma reactor having ~~which has~~ a plasma chamber, wherein flow-forming elements for forming the flow of gases are arranged ~~at a position selected from the group consisting of before,~~ in ~~and after~~ the plasma reactor to form a gas stream within the plasma chamber such that at least one zone in the gas flow is formed which is flow-reduced for producing a stable plasma, wherein said flow-forming elements are arranged to be adjustable.

2. (previously presented) Device according to claim 1, wherein the flow-forming elements arranged in the gas stream are configured as cones, drops, annular gaps, diaphragms, grids, baffle bodies, vortex tubes, cyclones or turbines.

3. (previously presented) Device according to claim 1, wherein a reaction tube is arranged axially after the reactor.

4. (currently amended) Device according to claim 1, wherein the plasma reactor has an inlet and an outlet, and wherein cooling chambers are arranged at a position selected from the group consisting of the inlet of the plasma reactor[[,]] and the outlet of the plasma reactor~~, in the wall of the reaction tube, and on the wall of the reaction tube~~.

5. (previously presented) Device according to claim 1, wherein feed elements are provided for introduction of cooling medium.

6. (previously presented) Device according to claim 5, wherein the feed elements form flow-forming elements.

7. (currently amended) Device according to claim [[1]] 3, wherein catalysts are arranged in the reaction tube, said catalysts in particular being heterogeneous catalysts ~~on bottoms~~, in a basket, or in a form selected from the group consisting of granules, nets, catalytically acting gases and [[or as]] a monolith.

8. (withdrawn) Method for carrying out gas reactions by passing a stream of gas or of gasifiable substances through a microwave-excited plasma in a plasma chamber of a plasma reactor, to convert the components in a device according to claim 1, wherein by means of adjustable flow-forming elements at least one flow-reduced zone is formed in the gas stream in order to produce a stable plasma within such a zone.

9. (withdrawn) Process according to claim 8, by means of the flow-forming elements a rotation of the gas stream is achieved.

10. (withdrawn) Process according to claim 8, wherein heat is recovered by means of a heat exchanger integrated in the reaction tube for exploitation of the radiation energy.

11. (withdrawn) Process according to claim 8, wherein gases or aerosols are introduced via nozzles to control the temperature, to achieve a more efficient activation after the plasma by means of the feeds.

12. (withdrawn) Process according to claim 8, wherein the plasma is pulse-operated.

13. (previously presented) Device according to clam 1, wherein said plasma chamber is a cylindrical plasma chamber.

14. (previously presented) Device according to claim 1, wherein said at least one zone is a central zone.

15. (previously presented) Device according to claim 5, wherein said feed elements are

selected from the group consisting of nozzles, slots, and tubes.

16. (previously presented) Device according to claim, 5, wherein the cooling medium is selected from the group consisting of cold gases, liquid substances and part of the starting materials.

17. (previously presented) Device according to claim 7, wherein the catalysts are arranged to be displaceable in the reaction tube.

18. (withdrawn) Method according to claim 8, wherein the plasma passed through the plasma chamber is non-equilibrium plasma.

19. (withdrawn) Process according to claim 10, wherein heat is recovered by means of a heat exchanger integrated in the reaction tube using a black exchange surface.

20. (withdrawn) Process according to claim 11, wherein the gases introduced to control the temperature include hydrogen.

21. (withdrawn) Process according to claim 11, wherein the gases or aerosols are introduced to control the temperature in the reactor or recombination zone.

22. (withdrawn) Process according to claim 12, wherein the stream of gas or of gasifiable substances is pulse operated by pulse control in a microwave generator.

23. (withdrawn) Process according to claim 12, wherein the plasma is passed through a resonator, and the plasma is pulse-operated by pulsed coupling of the microwaves into the resonator at pulse frequencies of from 1 Hz to 50 Hz.

24. (new) Device according to claim 3, wherein the reaction tube has a wall, and cooling chambers are arranged at a position selected from the group consisting of in the wall of the reaction tube and on the wall of the reaction tube.

25. (new) Device according to claim 1, wherein the flow-forming elements for forming the flow of gases and cause a rotating gas stream in whose central part the rotation speed is lowest, for forming the flow-reduced zone in the rotation center.

26. (new) Device according to claim 25, wherein the flow-forming elements put the gas stream in rotation immediately before or after the chamber.

27. (new) Method for carrying out gas reactions by passing a stream of gas or of gasifiable substances through a plasma in a plasma chamber of a plasma reaction for converting the components in a device according to claim 1, wherein at least one flow-reduced zone is formed in the gas stream in the plasma chamber by adjustable flow-forming elements for producing a stable plasma within said at least one flow-reduced zone.

28. (new) Method according to claim 27, wherein a rotation of the gas stream is achieved by the flow-forming elements.

29. (new) Method according to claim 27, further comprising integrating a heat exchanger in the reaction tube for recovering heat.

30. (new) Method according to claim 27, further comprising introducing gases or aerosols via nozzles for controlling the temperature in the reaction or recombination zone.